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PATENT APPLICATION

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Docket No: Q67564

Yoshiyuki ISHII, et al.

Appln. No.: 10/060,148

Group Art Unit: 2878

Confirmation No.: 9744

Examiner: Stephen K. Yam

Filed: February 01, 2002

For: APPARATUS FOR DETECTING LIGHT-TRANSMISSIVE SHEET-LIKE BODY

SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. A check for the statutory fee of \$500.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

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Respectfully submitted,

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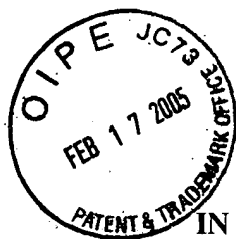
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WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: February 17, 2005



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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

MAIL STOP APPEAL BRIEF - PATENTS

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P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

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I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Fuji Photo Film Co. of Japan. The assignment was recorded on February 1, 2002 at Reel 012557, Frame 0418.

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II. RELATED APPEALS AND INTERFERENCES

To the knowledge of the Appellant, Appellant's legal representative and assignee, there are no known pending appeals, interferences or judicial proceedings related to, which directly affect or would be directly affected by the decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-18 are pending and stand rejected.

Claim 16 stands rejected under 35 U.S.C. § 102 as being anticipated by Schaede et al. (U.S.P. 5,764,367, hereafter "Schaede"). Claims 1, 2, 5-7, 9-11, 13, 15, 17 and 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Halter (U.S.P. 6,323,954) in view of Miranda (U.S.P. 3,594,087). Claims 3-4, 12 and 14 have been rejected under 35 U.S.C. § 103 as being unpatentable over Halter in view of Miranda and further in view of Anzai (4,713,550). Claim 8 has been rejected under 35 U.S.C. § 103 as being unpatentable over Halter in view of Miranda and further in view of Ushio (U.S.P. 6,489,624).

Claims 1, 11 and 16 were also deemed objected in the Final Office Action. However, it is believed the comments submitted on November 15, 2004 obviated these objections.

The prior art rejections of claims 1-18 are being appealed.

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IV. STATUS OF AMENDMENTS

Subsequent to the Final Office Action dated August 19, 2004, Appellant submitted a Response, without claim amendments, on November 15, 2004. The arguments set forth in the Response are believed to be of record.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Appellant's invention relates to an edge detector for a light-transmissive medium, whereby the presence of an edge can be determined by using sets of light data that pass through the edge and that bypass the edge. Comparison of such information permits the edge to be detected accurately, an effect that could not be achieved by conventional detectors for light transmissive materials. Page 1, line 25 to page 2, line 2.

With reference to an exemplary embodiment illustrated by Fig. 1, the claimed invention relates to a light source L emitting illuminating light, a reflector 28 for reflecting the illuminating light, and light detecting means, or image capturing means, including a CCD device 28 that receives light reflected by the reflector. Further, an optical system, including a lens 40, leads illuminating light reflected by the reflector as parallel beam light to the light-transmissive body 32. An edge of the light-transmissive body 32 placed between the optical system and reflector is detected based on a difference between two types of information. The two types of information include information of illuminating light led to the light detecting means through the edge and other information of the illuminating light which bypasses the edge. The embodiment corresponds to features recited in claim 1. Specification, page 5, line 11 to Page 6, line 29. Independent apparatus claim 11 includes similar recitations and further includes an image processor (Fig. 5, element 58, specification, page 10, line 21 to page 11, line 5). Independent apparatus claim 16 includes recitations similar to claim 1, but does not require the reflector.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellant requests review of each ground of rejection on appeal, in particular, the rejection of Claim 16 under 35 U.S.C. § 102 as being anticipated by Schaede et al. (U.S.P. 5,764,367, hereafter "Schaede"), the rejection of claims 1, 2, 5-7, 9-11, 13, 15, 17 and 18 under 35 U.S.C. § 103 as being unpatentable over Halter (U.S.P. 6,323,954) in view of Miranda (U.S.P. 3,594,087), the rejection of claims 3-4, 12 and 14 under 35 U.S.C. § 103 as being unpatentable over Halter in view of Miranda and further in view of Anzai (4,713,550), the rejection of Claim 8 under 35 U.S.C. § 103 as being unpatentable over Halter in view of Miranda and further in view of Ushio (U.S.P. 6,489,624).

VII. ARGUMENTS

Rejection over Schaede

Schaede does not teach edge detection of a light transmissive material as described by claim 16.

Turning to the applied art, Schaede relates to the detection of an edge of a sheet or web of printing materials, which are light-absorbent, or opaque to light. Col. 3, line 66 to col. 4, line 6. In relevant part, Schaede must rely on the difference in light intensities formed by an edge portion in comparison to the opaque portion in order to function. Col. 7, lines 2-12. Since a light transmissive medium would not produce the intensity differential that is central to the operation of the Schaede device, Schaede cannot include detection of edges of light transmissive materials as claimed. The Examiner's reliance on sheet 1 as teaching a light transmissive material is not warranted, since Schaede is directed to materials, such as paper, metal or foils which are opaque to light.

Claim 16 specifically relates to detection of a light-transmissive sheet-like body, wherein the edge is detected based on a difference between two types of information including light led through the edge and light which bypasses the edge. Therefore, the anticipation rejection of claim 16 is improper.

The Examiner maintains that the web material is necessarily light transmissive, and points to a non-zero level A3 of the light detector to support the rejection. Final Office Action, paragraph 8. The Examiner's position relies on assumptions not taught in Schaede, and is not supported for at least the following reasons.

First, the Examiner cites to an example of newspaper and copy paper to support the light-transmissive properties of the web. However, the light transmission properties of a material, like paper, will depend on the composition and thickness of the paper. The Examiner is speculating as to the light-transmissive properties of the materials disclosed. Since the specification clearly states that the web material is light absorbent, the transmission properties are not necessarily present.

Second, the Examiner's reliance on the non-zero level of signal A3 does not support the rejection. The level of signal A3 can be attributed to ambient light rather than to transmission of light through the web. Because Schaede relies on relative differences and not absolute differences, the non-zero level of A3 is not significant to the operations of the reference. As long as A2 shows a sufficient difference from A3, the objects of Schaede can be achieved. Therefore, the subject material of Schaede is not necessarily light-transmissive for this additional reason.

Third, the claimed invention is also different from Schaede in that the light detecting means detects the difference between the light through the edge and the light bypassing the edge (i.e., the light through the light-transmissive portion of the sheet other than the edge or through the portion other than the sheet). The Schaede reference acknowledges that an edge portion will include anomalies that make it difficult to determine the location of an edge. Therefore, the determination of edge portions in the reference depend on light obtained from areas that bypass the edge, in a covered and uncovered state, rather than from signals passing through the edge. Col. 5, lines 4-32. Therefore, claim 16 is not anticipated.

Rejection over Halter and Miranda

Argument 1: The combination of Halter and Miranda does not include a reflector reflecting light as parallel light as described by claims 1 and 11.

The Examiner continues to rely on Halter for teaching features of independent claims 1 and 11. The Examiner acknowledges that Halter does not teach an illuminating light reflected by the reflector as parallel light, but cites Miranda to make up for this deficiency. However, Miranda does not teach the leading of light reflected by the reflector as parallel light as the Examiner contends. Even a cursory review of Fig. 2 of Miranda shows that light incident in the direction from the medium 22 and support 24 towards the reflector 26 diverges. Conversely, light reflected from the reflective mirror 26 converges towards the medium 22. Appellant would submit that the medium 22 and support 24 provide diffusive effects which would obviate provision of parallel light. The Examiner cannot merely conclude that the light is parallel light when the Miranda reference contemplates that refractive effects will provide non-parallel light to impinge upon the reflector and be reflected therefrom. Col. 2, line 73 to col. 3, line 5.

In the Final Office Action, the Examiner acknowledges that the beams incident to a reflector are not parallel to each other. However, the Examiner contends that Miranda discloses a parallel-beam light because the incident beam and reflected beam travel the same path. The Examiner contends that the broad interpretation of "parallel-beam" supports the rejection. Page 10, sole full paragraph. The Examiner's rebuttal essentially acknowledges that the incident beam and reflected beam travels the identical path. This identity in path does not result in parallel beam light. Parallel implicates a juxtaposition between two beams. Overlapping lines, or beams, intersect entirely and thus do not comprise two lines. Therefore, the Examiner's rejection of independent claims 1 and 11

are not supported for at least these reasons. Claims 2-10, 12-15 and 17-18 are patentable based on their dependency.

Argument 2: Halter and Miranda do not teach discernment of information of light bypassing an edge portion as described by claims 1 and 11.

Appellant would also maintain that in the primary reference, Halter provides edge detection only based on information that passes through an edge. The Examiner's reliance on col. 4, lines 60-64 does not support the position that any light information that bypasses the edge is used. The cited portion merely categorizes light information that is disturbed by an edge (e.g. refracted) or not disturbed (not refracted). The non-refracted portion would still have passed through the edge, but perhaps at an attenuated level. The discussion cited by the Examiner does not support a bypass of the edge position as claimed. Any ambiguity on this point falls to the burden of the Examiner to demonstrate that the "non disturbed" part necessarily refers to a bypass portion, as opposed to that component of light that passes through the edge but undergoes some attenuation.

In addition, the Examiner contends that the operation of Halter shows that a light beam does bypass an edge of the light-transmissive medium. In this connection, the Examiner relies on Figs. 5a-5e. However, in the position K1, the medium is not disposed between the optical system and reflector as claimed since Fig. 5e does not include the reflector. The combination of the arrangement of Fig. 8 and Fig. 5 (which refers to Figs. 3 and 4) does not disclose each and every element of claims 1 and 11. The Examiner may not combine features of different embodiment without a basis to do so. In re Kramer, 18 U.S. P.O. 2d 1415, 1416 (Fed. Cir. 1991).

Claims 2, 5-7, 9-10, 13, 15, 17 and 18 are patentable based on their dependency.

Argument 3: Miranda and Halter do not comprise a proper combination for the rejection of claims 1 and 11.

The Examiner's proffered motivation for combining Halter and Miranda is also questionable, if not inconsistent. In order to provide increased contrast, the Examiner indicates that parallel light should be converged. However, converged light, by definition, is not parallel light. The converged or focused light would appear to be the opposite of making light beams parallel.

Additionally, the Examiner's reading to impose parallel light characteristics on converging beams is internally inconsistent. Beams that travel on an identical path are completely overlapping and thus are not parallel-beams. In addition, light traveling on an identical path but in opposite directions in Miranda would offer no increased contrast. The passage of the incident light through an attenuating mirror effectively reduces any increase in contrast. The Examiner's proffered rationale for the combination of Halter and Miranda remains unsupported. Therefore, Appellant would argue that claims 1 and 11 are patentable for this additional reason. Their dependent claims are patentable for similar reasons.

Argument 3A: The combination of Halter and Miranda does not teach the location of the condenser lens relative to a reflector or aperture as described by claim 6.

With further regard to dependent claim 6, this claim describes that a condenser lens is disposed on a side closer to the reflector and an aperture member is disposed at a side of the condenser lens closer to the detecting means. The Examiner cites col. 4 of Halter to teach this feature. Final Office Action, paragraph bridging pages 5-6. However, the cited portion relates to the corresponding description of Fig. 4 which does not include any reflector at all. According to the

decision in Kramer, as cited above, the Examiner may not combine embodiments of Fig. 4 with other embodiments without justification for doing so.

Moreover, the Examiner appears to concede that the art of record does not include the aperture relative to the condenser as claimed. The Examiner reasons that it would be obvious to place an aperture at the focal point of the condenser to define the field of view for the detector. However, there are several alternative optical arrangements for leading light to a detector to define a field of view. See Fig. 2 of Miranda, for example. In Miranda, the arrangement of the condenser and aperture relative to detector clearly differs from that claimed. The arrangement described by Applicant is not taught by the art, and the rationale for the rejection is based on hindsight. The basis for hindsight reconstruction is demonstrable relative to the art of record that shows a different configuration for light detection. Therefore, claim 6 is separately patentable for this additional reason.

Argument 3B: The combination of Miranda and Halter does not suggest use of an illuminating light having a wavelength of at least 850 nm as described by claim 9.

The Examiner appears to concede that the combination of Halter and Miranda does not teach the illumination characteristic of claim 9. Final Office Action, page 6, full paragraph. The Examiner reasons that one skilled in the art would understand that a photosensitive film is sensitive to visible light, and therefore infrared light could be used to prevent interference with visible light. Appellant submits that the rationale of the substitution is not supportable since Miranda, which relates to a photosensitive film, uses visible light for inspection purposes. Col. 2, lines 42-52. Applicant submits that the film corresponding to claim has different light transmissive properties before and after exposure. Accordingly, the non-light-transmissive properties after exposure indicates infrared

light for detection purposes which does not affect the film. This characteristics appears to be lacking in the cited art, which uses visible light for detection. There is no basis in the art of record to use a light having the wavelength characteristic as described by claim 9. Therefore, claim 9 is separately patentable for this additional reason.

Rejection over Halter, Miranda and Anzai

Argument 1: Anzai does not make up for the deficiency of the primary combination of Halter and Miranda in the rejection of claims 3-4, 12 and 14.

The Examiner further cites Anzai to teach the features of claims 3-4, 12 and 14. However, Anzai does not make up for the deficiency of the primary combination of Halter and Miranda. Therefore, claims 3-4, 12 and 14 are patentable for the reasons set forth for the base claims.

Argument 1A: Anzai does not teach plural optical systems spaced along a length of the light-transmissive body as described by claim 3.

With further regard to claim 3, this claim describes plural optical systems. The Examiner concedes that Halter does not teach this feature (Final Office Action, page 7, lines 3-4). However, the Examiner cites Anzai to make up for the deficiency, apparently citing the reflector 5. Significantly, the reflector 5 corresponds to a single reflector disposed along the cover of a copy machine. The single reflector does not comprise plural optical systems as described by claim 3. Therefore, claim 3 is separately patentable for this additional reason. Claim 4 is further patentable based on its dependency.

Rejection over Halter, Miranda and Ushio:

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Ushio does not make up for the deficiency of the primary combination of Halter and Miranda in the rejection of claim 8.

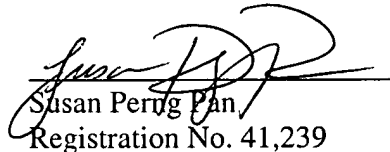
The Examiner further cites Ushio to teach the features of claim 8. However, Ushio does not make up for the deficiency of the primary combination of Halter and Miranda. Therefore, claim 8 is patentable for the reasons set forth for its base claim.

In view of the above, Appellant submits that claims 1-18 are in condition for allowance. Therefore it is respectfully requested that the subject application be passed to issue at the earliest possible time. The Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: February 17, 2005

CLAIMS APPENDIX

CLAIMS 1-18 ON APPEAL:

1. An apparatus for detecting a light-transmissive sheet-like body, comprising:

a light source unit for emitting illuminating light;

a reflector for reflecting the illuminating light;

light detecting means for detecting the illuminating light which is reflected by said reflector;

and

an optical system for leading the illuminating light reflected by said reflector as parallel-beam light to the light-transmissive sheet-like body and converging the illuminating light reflected by said reflector to said light detecting means,

wherein an edge of the light-transmissive sheet-like body placed between said optical system and said reflector is detected based on a difference between two types of information, said two types of information including information of said illuminating light which is led to said light detecting means through said edge and another information of said illuminating light which bypasses said edge and is led to said light detecting means.
2. An apparatus according to claim 1, wherein said light detecting means comprises a two-dimensional area sensor for obtaining two-dimensional distribution information of said illuminating light.

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3. An apparatus according to claim 1, further comprising a plurality of optical systems wherein said optical systems are spaced from each other along the length of said light-transmissive sheet-like body.

4. An apparatus according to claim 3, further comprising:

a plurality of light detecting means; and

processing means for processing information obtained by said plurality of light detecting means to calculate the length of said light-transmissive sheet-like body.

5. An apparatus according to claim 1, wherein said optical system comprises a telecentric optical system for leading said illuminating light therethrough to said light detecting means.

6. An apparatus according to claim 5, wherein said telecentric optical system comprises:

a condenser lens disposed on a side closer to said reflector; and

an aperture member disposed at a focal point of said condenser lens on a side closer to said light detecting means.

7. An apparatus according to claim 1, wherein said optical system comprises a half-silvered mirror for leading the illuminating light emitted from said light source to said light-transmissive sheet-like body and leading the illuminating light reflected by said reflector to said light detecting means.

8. An apparatus according to claim 1, wherein said light source and said optical system are connected to each other by an optical fiber for leading the illuminating light.

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9. An apparatus according to claim 1, wherein said light-transmissive sheet-like body is made of a photosensitive material sensitive to visible light, said illuminating light having a wavelength of at least 850 nm.

10. An apparatus according to claim 1, wherein said light detecting means is a CCD camera.

11. An apparatus for detecting a light-transmissive sheet-like body, comprising:
a light source unit for emitting illuminating light;
a reflector for reflecting the illuminating light;
image capturing means for capturing as an image the illuminating light which is reflected by said reflector;
an optical system for leading the illuminating light reflected by said reflector as parallel-beam light to the light-transmissive sheet-like body and converging the illuminating light reflected by said reflector to a light detecting means; and
an image processor for processing images captured by the image capturing means,

wherein an edge of the light-transmissive sheet-like body placed between said optical system and said reflector is detected based on a difference between two types of information, said two types of information including information of said illuminating light which is led to said light detecting means through said edge and another information of said illuminating light which bypasses said edge and is led to said light detecting means.

12. An apparatus according to claim 11, wherein said image processor determines the positions of edges of said images; and

said image processor determines the length of the light-transmissive sheet-like body based on the positions of edges.

13. An apparatus according to claim 11, wherein said image processor scans the images captured by the image capturing means in the direction in which the light-transmissive sheet-like body is fed;

said image processor detects the image density;

said image processor determines the position of an edge of said image to be where the image density changes by a predetermined amount.

14. An apparatus according to claim 13, wherein said image processor determines the length of the light-transmissive sheet-like body based on the difference between the positions of edges detected in the image.

15. An apparatus according to claim 1, wherein said reflector reflects said illuminating light in a direction opposite to a direction in which said illuminating light comes to said reflector.

16. An apparatus for detecting a light-transmissive sheet-like body, comprising:

a light source unit for emitting illuminating light;

light detecting means for detecting the illuminating light; and

an optical system for leading the illuminating light as parallel-beam light to the light-transmissive sheet-like body and converging the illuminating light to said light detecting means,

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wherein an edge of the light-transmissive sheet-like body placed between said light source unit and said optical system is detected based on a difference between two types of information, said two types of information including information of said illuminating light which is led to said light detecting means through said edge and another information of said illuminating light which bypasses said edge and is led to said light detecting means.

17. An apparatus according to claim 1, wherein the illuminating light passes through the light-transmissive sheet-like body twice before entering said light detecting means.

18. An apparatus according to claim 7, wherein at least one element of said optical system is placed on an optical path from said light source unit to said reflector through said half-silvered mirror.

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EVIDENCE APPENDIX:

Pursuant to 37 C.F.R. § 41.37(c)(1)(ix), submitted herewith are copies of any evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 or any other evidence entered by the Examiner and relied upon by Appellant in the appeal.

NONE

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RELATED PROCEEDINGS APPENDIX

Submitted herewith are copies of decisions rendered by a court or the Board in any proceeding identified about in Section II pursuant to 37 C.F.R. § 41.37(c)(1)(ii).

NONE